



PCT10

RAW SEQUENCE LISTING
PATENT APPLICATION: US/10/019,541

DATE: 06/05/2002
TIME: 17:07:35

Input Set : A:\019541
Output Set: N:\CRF3\06052002\J019541.raw

ENTERED

4 <110> APPLICANT: Herbers, Karin
 5 Badur, Ralf
 6 Kunze, Irene
 7 Geiger, Michael
 8 Mock, Hans-Peter
 10 <120> TITLE OF INVENTION: Identification and overexpression of a DNA sequence encoding
 a 2-methyl-6-phytylhydroquinone methyltransferase in
 11 plants.
 12
 14 <130> FILE REFERENCE: 0817/00001
 16 <140> CURRENT APPLICATION NUMBER: US 10/019,541
 C--> 17 <141> CURRENT FILING DATE: 2002-05-06
 17 <150> PRIOR APPLICATION NUMBER: PCT/EP/00/05862
 18 <151> PRIOR FILING DATE: 2000-06-23
 20 <160> NUMBER OF SEQ ID NOS: 10
 22 <170> SOFTWARE: WordPerfect version 6.1
 24 <210> SEQ ID NO: 1
 25 <211> LENGTH: 957
 26 <212> TYPE: DNA
 27 <213> ORGANISM: Synechocystis PCC6803
 29 <220> FEATURE:
 30 <221> NAME/KEY: CDS
 31 <222> LOCATION: (1)..(957)
 33 <400> SEQUENCE: 1
 35 atg ccc gag tat ttg ctt ctg ccc gct ggc cta att tcc ctc tcc ctg 48
 36 Met Pro Glu Tyr Leu Leu Leu Pro Ala Gly Leu Ile Ser Leu Ser Leu
 37 1 5 10 15
 39 gcg atc gcc gct gga ctg tat ctc cta act gcc cgg ggc tat cag tca 96
 40 Ala Ile Ala Ala Gly Leu Tyr Leu Leu Thr Ala Arg Gly Tyr Gln Ser
 41 20 25 30
 42 tcg gat tcc gtg gcc aac gcc tac gac caa tgg aca gag gac ggc att 144
 43 Ser Asp Ser Val Ala Asn Ala Tyr Asp Gln Trp Thr Glu Asp Gly Ile
 44 35 40 45
 46 ttg gaa tat tac tgg ggc gac cat atc cac ctc ggc cat tat ggc gat 192
 47 Leu Glu Tyr Tyr Trp Gly Asp His Ile His Leu Gly His Tyr Gly Asp
 48 50 55 60
 50 ccg cca gtg gcc aag gat ttc atc caa tcg aaa att gat ttt gtc cat 240
 51 Pro Pro Val Ala Lys Asp Phe Ile Gln Ser Lys Ile Asp Phe Val His
 52 65 70 75 80
 54 gcc atg gcc cag tgg ggc gga tta gat aca ctt ccc ccc ggc aca acg 288
 55 Ala Met Ala Gln Trp Gly Gly Leu Asp Thr Leu Pro Pro Gly Thr Thr
 56 85 90 95
 58 gta ttg gat gtg ggt tgc ggc att ggc ggt agc agt cgc att ctc gcc 336
 59 Val Leu Asp Val Gly Cys Gly Ile Gly Ser Ser Arg Ile Leu Ala

RAW SEQUENCE LISTING
PATENT APPLICATION: US/10/019,541

DATE: 06/05/2002
TIME: 17:07:35

Input Set : A:\019541
Output Set: N:\CRF3\06052002\J019541.raw

60	100	105	110	
62	aaa gat tat ggt ttt aac gtt acc ggc atc acc att agt ccc caa cag			384
63	Lys Asp Tyr Gly Phe Asn Val Thr Gly Ile Thr Ile Ser Pro Gln Gln			
64	115	120	125	
66	gtg aaa cgg gcg acg gaa tta act cct ccc gat gtg acg gcc aag ttt			432
67	Val Lys Arg Ala Thr Glu Leu Thr Pro Pro Asp Val Thr Ala Lys Phe			
68	130	135	140	
70	gct gac gat gct atg gct ttg tct ttt cct gac ggt agt ttc gac			480
71	Ala Val Asp Asp Ala Met Ala Leu Ser Phe Pro Asp Gly Ser Phe Asp			
72	145	150	155	160
74	gta gtt tgg tcg gtg gaa gca ggg ccc cac atg cct gac aaa gct gtg			528
75	Val Val Trp Ser Val Glu Ala Gly Pro His Met Pro Asp Lys Ala Val			
76	165	170	175	
78	ttt gcc aag gaa tta ctg cgg gtc gtg aaa cca ggg ggc att ctg gtg			576
79	Phe Ala Lys Glu Leu Leu Arg Val Val Lys Pro Gly Gly Ile Leu Val			
80	180	185	190	
82	gtg gcg gat tgg aat caa cgg gac gat cgc caa gtg ccc ctc aac ttc			624
83	Val Ala Asp Trp Asn Gln Arg Asp Asp Arg Gln Val Pro Leu Asn Phe			
84	195	200	205	
86	tgg gaa aaa cca gtg atg cga caa ctg ttg gat caa tgg tcc cac cct			672
87	Trp Glu Lys Pro Val Met Arg Gln Leu Leu Asp Gln Trp Ser His Pro			
88	210	215	220	
90	gcc ttt gcc agc att gaa ggt ttt gcg gaa aat ttg gaa gcc acg ggt			720
91	Ala Phe Ala Ser Ile Glu Gly Phe Ala Glu Asn Leu Glu Ala Thr Gly			
92	225	230	235	240
94	ttg gtg gag ggc cag gtg act act gct gat tgg act gta ccg acc ctc			768
95	Leu Val Glu Gly Gln Val Thr Thr Ala Asp Trp Thr Val Pro Thr Leu			
96	245	250	255	
98	ccc gct tgg ttg gat acc att tgg cag ggc att atc cgg ccc cag ggc			816
99	Pro Ala Trp Leu Asp Thr Ile Trp Gln Gly Ile Ile Arg Pro Gln Gly			
100	260	265	270	
102	tgg tta caa tac ggc att cgt ggg ttt atc aaa tcc gtg cgg gaa gta			864
103	Trp Leu Gln Tyr Gly Ile Arg Gly Phe Ile Lys Ser Val Arg Glu Val			
104	275	280	285	
106	ccg act att tta ttg atg cgc ctt gcc ttt ggg gta gga ctt tgt cgc			912
107	Pro Thr Ile Leu Leu Met Arg Leu Ala Phe Gly Val Gly Leu Cys Arg			
108	290	295	300	
110	ttc ggt atg ttc aaa gca gtg cga aaa aac gcc act caa gct taa			957
111	Phe Gly Met Phe Lys Ala Val Arg Lys Asn Ala Thr Gln Ala			
112	305	310	315	
114	<210> SEQ ID NO: 2			
115	<211> LENGTH: 318			
116	<212> TYPE: PRT			
117	<213> ORGANISM: Synechocystis PCC6803			
119	<400> SEQUENCE: 2			
121	Met Pro Glu Tyr Leu Leu Leu Pro Ala Gly Leu Ile Ser Leu Ser Leu			
122	1	5	10	15
124	Ala Ile Ala Ala Gly Leu Tyr Leu Leu Thr Ala Arg Gly Tyr Gln Ser			
125	20	25	30	

RAW SEQUENCE LISTING

PATENT APPLICATION: US/10/019,541

DATE: 06/05/2002

TIME: 17:07:35

Input Set : A:\019541

Output Set: N:\CRF3\06052002\J019541.raw

127 Ser Asp Ser Val Ala Asn Ala Tyr Asp Gln Trp Thr Glu Asp Gly Ile
 128 35 40 45
 130 Leu Glu Tyr Tyr Trp Gly Asp His Ile His Leu Gly His Tyr Gly Asp
 131 50 55 60
 133 Pro Pro Val Ala Lys Asp Phe Ile Gln Ser Lys Ile Asp Phe Val His
 134 65 70 75 80
 136 Ala Met Ala Gln Trp Gly Gly Leu Asp Thr Leu Pro Pro Gly Thr Thr
 137 85 90 95
 139 Val Leu Asp Val Gly Cys Gly Ile Gly Gly Ser Ser Arg Ile Leu Ala
 140 100 105 110
 142 Lys Asp Tyr Gly Phe Asn Val Thr Gly Ile Thr Ile Ser Pro Gln Gln
 143 115 120 125
 145 Val Lys Arg Ala Thr Glu Leu Thr Pro Pro Asp Val Thr Ala Lys Phe
 146 130 135 140
 148 Ala Val Asp Asp Ala Met Ala Leu Ser Phe Pro Asp Gly Ser Phe Asp
 149 145 150 155 160
 151 Val Val Trp Ser Val Glu Ala Gly Pro His Met Pro Asp Lys Ala Val
 152 165 170 175
 154 Phe Ala Lys Glu Leu Leu Arg Val Val Lys Pro Gly Gly Ile Leu Val
 155 180 185 190
 157 Val Ala Asp Trp Asn Gln Arg Asp Asp Arg Gln Val Pro Leu Asn Phe
 158 195 200 205
 160 Trp Glu Lys Pro Val Met Arg Gln Leu Leu Asp Gln Trp Ser His Pro
 161 210 215 220
 163 Ala Phe Ala Ser Ile Glu Gly Phe Ala Glu Asn Leu Glu Ala Thr Gly
 164 225 230 235 240
 166 Leu Val Glu Gly Gln Val Thr Thr Ala Asp Trp Thr Val Pro Thr Leu
 167 245 250 255
 169 Pro Ala Trp Leu Asp Thr Ile Trp Gln Gly Ile Ile Arg Pro Gln Gly
 170 260 265 270
 172 Trp Leu Gln Tyr Gly Ile Arg Gly Phe Ile Lys Ser Val Arg Glu Val
 173 275 280 285
 175 Pro Thr Ile Leu Leu Met Arg Leu Ala Phe Gly Val Gly Leu Cys Arg
 176 290 295 300
 178 Phe Gly Met Phe Lys Ala Val Arg Lys Asn Ala Thr Gln Ala
 179 305 310 315
 181 <210> SEQ ID NO: 3
 182 <211> LENGTH: 974
 183 <212> TYPE: DNA
 184 <213> ORGANISM: Synechocystis PCC6803
 186 <220> FEATURE:
 187 <221> NAME/KEY: CDS
 188 <222> LOCATION: (7)..(963)
 190 <400> SEQUENCE: 3
 192 ggatcc atg ccc gag tat ttg ctt ctg ccc gct ggc cta att tcc ctc 48
 193 Met Pro Glu Tyr Leu Leu Pro Ala Gly Leu Ile Ser Leu
 194 1 5 10
 196 tcc ctg gcg atc gcc gct gga ctg tat ctc cta act gcc cgg ggc tat 96
 197 Ser Leu Ala Ile Ala Ala Gly Leu Tyr Leu Leu Thr Ala Arg Gly Tyr

RAW SEQUENCE LISTING

PATENT APPLICATION: US/10/019,541

DATE: 06/05/2002

TIME: 17:07:35

Input Set : A:\019541

Output Set: N:\CRF3\06052002\J019541.raw

198	15	20	25	30	
200	cag tca tcg gat tcc gtg gcc aac gcc tac gac caa tgg aca gag gac				144
201	Gln Ser Ser Asp Ser Val Ala Asn Ala Tyr Asp Gln Trp Thr Glu Asp				
202	35	40	45		
204	ggc att ttg gaa tat tac tgg ggc gac cat atc cac ctc ggc cat tat				192
205	Gly Ile Leu Glu Tyr Tyr Trp Gly Asp His Ile His Leu Gly His Tyr				
206	50	55	60		
208	ggc gat ccg cca gtg gcc aag gat ttc atc caa tcg aaa att gat ttt				240
209	Gly Asp Pro Pro Val Ala Lys Asp Phe Ile Gln Ser Lys Ile Asp Phe				
210	65	70	75		
212	gtc cat gcc atg gcc cag tgg ggc gga tta gat aca ctt ccc ccc ggc				288
213	Val His Ala Met Ala Gln Trp Gly Gly Leu Asp Thr Leu Pro Pro Gly				
214	80	85	90		
216	aca acg gta ttg gat gtg ggt tgc ggc att ggc ggt agc agt cgc att				336
217	Thr Thr Val Leu Asp Val Gly Cys Gly Ile Gly Ser Ser Arg Ile				
218	95	100	105	110	
220	ctc gcc aaa gat tat ggt ttt aac gtt acc ggc atc acc att agt ccc				384
221	Leu Ala Lys Asp Tyr Gly Phe Asn Val Thr Gly Ile Thr Ile Ser Pro				
222	115	120	125		
224	caa cag gtg aaa cgg gcg acg gaa tta act cct ccc gat gtg acg gcc				432
225	Gln Gln Val Lys Arg Ala Thr Glu Leu Thr Pro Pro Asp Val Thr Ala				
226	130	135	140		
228	aag ttt gcg gtg gac gat gct atg gct ttg tct ttt cct gac ggt agt				480
229	Lys Phe Ala Val Asp Asp Ala Met Ala Leu Ser Phe Pro Asp Gly Ser				
230	145	150	155		
232	tcc gac gta gtt tgg tcg gtg gaa gca ggg ccc cac atg cct gac aaa				528
233	Phe Asp Val Val Trp Ser Val Glu Ala Gly Pro His Met Pro Asp Lys				
234	160	165	170		
236	gct gtg ttt gcc aag gaa tta ctg cgg gtc gtg aaa cca ggg ggc att				576
237	Ala Val Phe Ala Lys Glu Leu Leu Arg Val Val Lys Pro Gly Gly Ile				
238	175	180	185	190	
240	ctg gtg gcg gat tgg aat caa cgg gac gat cgc caa gtg ccc ctc				624
241	Leu Val Val Ala Asp Trp Asn Gln Arg Asp Asp Arg Gln Val Pro Leu				
242	195	200	205		
244	aac ttc tgg gaa aaa cca gtg atg cga caa ctg ttg gat caa tgg tcc				672
245	Asn Phe Trp Glu Lys Pro Val Met Arg Gln Leu Leu Asp Gln Trp Ser				
246	210	215	220		
248	cac cct gcc ttt gcc agc att gaa ggt ttt gcg gaa aat ttg gaa gcc				720
249	His Pro Ala Phe Ala Ser Ile Glu Gly Phe Ala Glu Asn Leu Glu Ala				
250	225	230	235		
252	acg ggt ttg gtg gag ggc cag gtg act act gct gat tgg act gta cgg				768
253	Thr Gly Leu Val Glu Gly Gln Val Thr Ala Asp Trp Thr Val Pro				
254	240	245	250		
256	acc ctc ccc gct tgg ttg gat acc att tgg cag ggc att atc cgg ccc				816
257	Thr Leu Pro Ala Trp Leu Asp Thr Ile Trp Gln Gly Ile Ile Arg Pro				
258	255	260	265	270	
260	cag ggc tgg tta caa tac ggc att cgt ggg ttt atc aaa tcc gtg cgg				864
261	Gln Gly Trp Leu Gln Tyr Gly Ile Arg Gly Phe Ile Lys Ser Val Arg				
262	275	280	285		

RAW SEQUENCE LISTING

PATENT APPLICATION: US/10/019,541

DATE: 06/05/2002

TIME: 17:07:35

Input Set : A:\019541

Output Set: N:\CRF3\06052002\J019541.raw

264 gaa gta ccg act att tta ttg atg cgc ctt gcc ttt ggg gta gga ctt 912
 265 Glu Val Pro Thr Ile Leu Leu Met Arg Leu Ala Phe Gly Val Gly Leu
 266 290 295 300
 268 tgt cgc ttc ggt atg ttc aaa gca gtg cga aaa aac gcc act caa gct 960
 269 Cys Arg Phe Gly Met Phe Lys Ala Val Arg Lys Asn Ala Thr Gln Ala
 270 305 310 315
 272 taa attgcggatc c 974
 275 <210> SEQ ID NO: 4
 276 <211> LENGTH: 318
 277 <212> TYPE: PRT
 278 <213> ORGANISM: Synechocystis PCC6803
 280 <400> SEQUENCE: 4
 282 Met Pro Glu Tyr Leu Leu Leu Pro Ala Gly Leu Ile Ser Leu Ser Leu
 283 1 5 10 15
 285 Ala Ile Ala Ala Gly Leu Tyr Leu Leu Thr Ala Arg Gly Tyr Gln Ser
 286 20 25 30
 288 Ser Asp Ser Val Ala Asn Ala Tyr Asp Gln Trp Thr Glu Asp Gly Ile
 289 35 40 45
 291 Leu Glu Tyr Tyr Trp Gly Asp His Ile His Leu Gly His Tyr Gly Asp
 292 50 55 60
 294 Pro Pro Val Ala Lys Asp Phe Ile Gln Ser Lys Ile Asp Phe Val His
 295 65 70 75 80
 297 Ala Met Ala Gln Trp Gly Gly Leu Asp Thr Leu Pro Pro Gly Thr Thr
 298 85 90 95
 300 Val Leu Asp Val Gly Cys Gly Ile Gly Gly Ser Ser Arg Ile Leu Ala
 301 100 105 110
 303 Lys Asp Tyr Gly Phe Asn Val Thr Gly Ile Thr Ile Ser Pro Gln Gln
 304 115 120 125
 306 Val Lys Arg Ala Thr Glu Leu Thr Pro Pro Asp Val Thr Ala Lys Phe
 307 130 135 140
 309 Ala Val Asp Asp Ala Met Ala Leu Ser Phe Pro Asp Gly Ser Phe Asp
 310 145 150 155 160
 312 Val Val Trp Ser Val Glu Ala Gly Pro His Met Pro Asp Lys Ala Val
 313 165 170 175
 315 Phe Ala Lys Glu Leu Leu Arg Val Val Lys Pro Gly Gly Ile Leu Val
 316 180 185 190
 318 Val Ala Asp Trp Asn Gln Arg Asp Asp Arg Gln Val Pro Leu Asn Phe
 319 195 200 205
 321 Trp Glu Lys Pro Val Met Arg Gln Leu Leu Asp Gln Trp Ser His Pro
 322 210 215 220
 324 Ala Phe Ala Ser Ile Glu Gly Phe Ala Glu Asn Leu Glu Ala Thr Gly
 325 225 230 235 240
 327 Leu Val Glu Gly Gln Val Thr Thr Ala Asp Trp Thr Val Pro Thr Leu
 328 245 250 255
 330 Pro Ala Trp Leu Asp Thr Ile Trp Gln Gly Ile Ile Arg Pro Gln Gly
 331 260 265 270
 333 Trp Leu Gln Tyr Gly Ile Arg Gly Phe Ile Lys Ser Val Arg Glu Val
 334 275 280 285
 336 Pro Thr Ile Leu Leu Met Arg Leu Ala Phe Gly Val Gly Leu Cys Arg

VERIFICATION SUMMARY

PATENT APPLICATION: US/10/019,541

DATE: 06/05/2002

TIME: 17:07:36

Input Set : A:\019541

Output Set: N:\CRF3\06052002\J019541.raw

L:17 M:271 C: Current Filing Date differs, Replaced Current Filing Date